

ABSTRACT OF THE DISCLOSURE

There are provided a control apparatus capable of controlling a controlled object with reduce dead time in sign inversion between the input to and the output from one of $\Delta\Sigma$ and $\Sigma\Delta$ modulation algorithms, thereby attaining improved convergence of the output from the controlled object to a target value and improved controllability. An ECU of the control apparatus calculates a limiting value DSMVO2L of a reference input DSMVO2, as DSMVO2L = -1 when DSMVO2 < -1, DSMVO2L = 1 when 1 < DSMVO2, and DSMVO2L = DSMVO2 in the other cases. By inputting the limiting value DSMVO2L to a $\Delta\Sigma$ modulation algorithm, a DSM output is calculated, according to which the air-fuel ratio of a mixture supplied to an internal combustion engine is controlled such that output from an oxygen concentration sensor converges to a target value.